

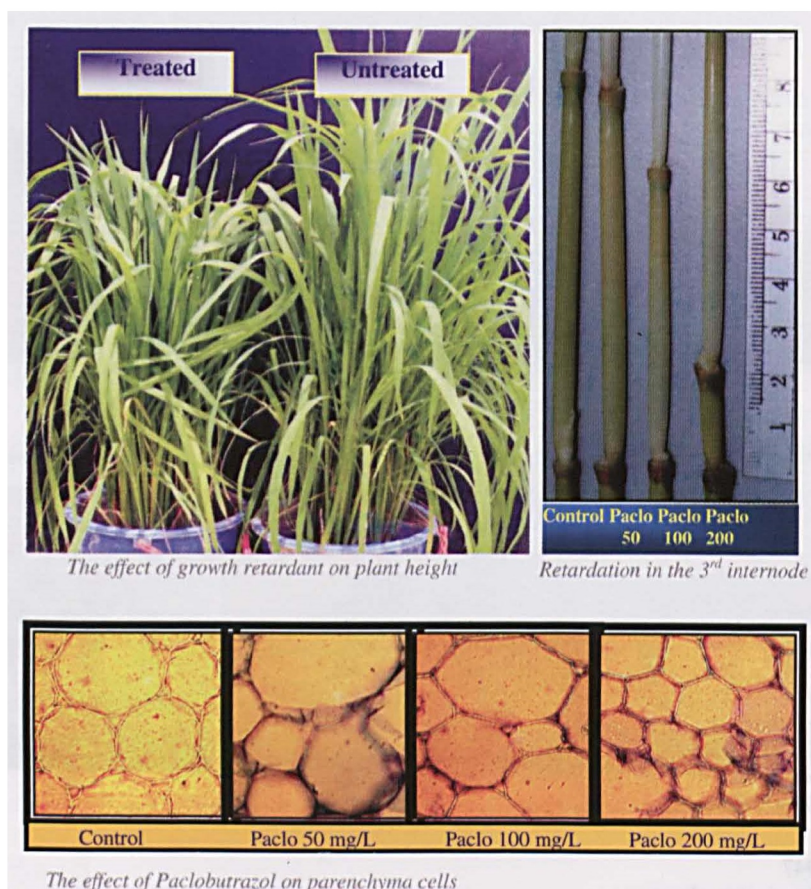
Paclobutrazol: A Potential Retardant for Improved Lodging Resistance in Rice (*Oryza Sativa* L.)



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The shift from transplanting to direct seeding using unsuitable cultivars has resulted in increased losses due to lodging. A major contributing factor is the phenotypic characteristics whereby plants are tall with long internodes. Breeding for shorter plants can cause loss in eating quality. The objective of this study was to use Paclobutrazol, a hormone normally used to initiate flowering in fruits, to inhibit elongation of internodes thus, resulting in shorter plant with better ability to withstand lodging.

Rice plants of cultivar MR 219 were grown in a screen house and standard practice for crop establishment was employed. The treatments were applied as foliar spray at panicle initiation at concentrations of 50, 100, and 200 mg/liter. Measurements included plant height, internode length, culm length and diameter at harvest. Cell wall constituent of the stem i.e. cellulose, hemi cellulose and lignin was measured and the stem histology was studied. Lodging resistance was measured using two parameters i.e. bending and breaking resistance. Flag leaf area, chlorophyll content, photosynthetic rate and yield was determined to ensure that there was no detrimental effect of the treatment on the yield.



Paclobutrazol retarded all internodes, with increased retardation at higher concentrations, but increased culm diameter. Both lodging resistance parameters measured gave improved values as compared to control with 30 and 20% increment for 200 and 100 mg/liter respectively. There was an increase in cell wall content and stem histology showed that treatment with Paclobutrazol increased cell wall thickness and the number of large vascular bundles. Although the treatments decreased flag leaf area but it increased chlorophyll content per unit area and maintained or slightly increased yield. Paclobutrazol at 100ppm has good potential to provide the required short and sturdy rice plants, thus reducing losses due to lodging.

Reader Enquiry

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